



FACTOR

VIS VIRES

OWNER'S MANUAL



English:
Version 1

IMPORTANT: This manual and the accompanying Technical Supplement contain important safety, performance and service information. Read it before you take your first ride on your new bike, and keep it for future reference.

Your **FACTOR®** bike will be delivered to you partially assembled. Additional safety, performance and service information for specific components such as pedals, or for accessories such as helmets or lights that you purchase, may also be available from **FACTOR®**. Make sure that you retain all the manufacturers' literature that was included with your bike or accessories.

This manual should be read before you submit a support request to **FACTOR®**. It is up to you to take responsibility for your safety. If you have any questions or do not understand anything in the manual, please consult **FACTOR®**.

GENERAL WARNING

Like any sport, cycling involves risk of injury and damage. By choosing to ride a bike, you assume responsibility for those risks. Proper use and maintenance of your bike reduces the risk of injury.

This Supplement contains 'Warnings' and 'Cautions' concerning the consequences of failure to maintain or inspect your bike and of failure to follow safe cycling practices.

- The combination of the safety alert symbol and the word **WARNING** indicates a potentially hazardous situation which, if not avoided, could result in serious injury or death.
- The combination of the safety alert symbol and the word **CAUTION** indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, or is an alert against unsafe practices.
- The word **CAUTION** used without the safety alert symbol indicates a situation which, if not avoided, could result in serious damage to the bicycle or the voiding of your warranty.



WARNING: Many countries require specific safety devices. It is your responsibility to familiarize yourself with the laws of the region where you ride and to comply with all applicable laws, including properly equipping yourself and your bike as the law requires.

Observe all local bicycle laws and regulations. Observe regulations about bicycle lighting, reflectors, licensing of bicycles, riding on sidewalks, laws regulating bike path and trail use, helmet laws, child carrier laws, and special bicycle traffic laws. It is your responsibility to know and obey the laws.

Always wear a cycling helmet which is certified to EN 1078:2012 or your national equivalent and is appropriate for the type of riding you do. Always follow the helmet manufacturer's instructions for fit, use and care of your helmet. Most serious cycle injuries involve head injuries which might have been avoided if the rider had worn an appropriate helmet.



WARNING: Failure to wear a helmet when riding may result in serious injury or death.



WARNING: Using the correct tightening force on the fasteners – nuts, bolts, and screws – on your bike is important. Too little force and the fastener may not hold securely; too much force and the fastener can strip threads, stretch, deform or break. Either way, incorrect tightening force can result in component failure, which could cause serious injury or death.



WARNING: As with all mechanical components, FACTOR® Bikes and components are subjected to wear and high stresses during use. Different materials and components may react to wear or stress fatigue in different ways. If the design life of a component has been exceeded, it may suddenly fail, possibly causing injuries to the rider. Any form of crack, scratches or change of colouring in highly stressed areas indicate that the life of the component has been reached, and it should be replaced.

As a parent or guardian, you are responsible for the activities and safety of your minor child. Your FACTOR® bike is a high-performance product and is not intended for use by children under 12 under any circumstances.



WARNING: Do not allow children to ride or otherwise operate the bike, whether supervised or unsupervised.



CAUTION: Do not dispose of the Di2 Battery in normal household waste. Waste batteries must only be disposed of at designated local waste facility centres and through collection schemes authorized by governmental authorities. Replacement batteries can be ordered from Shimano.

STATEMENT OF COMPLIANCE

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This manual is not intended as a comprehensive assembly, use, service, repair or maintenance manual. Please contact FACTOR® or, where appropriate, consult your local bike retailer for information on classes, clinics or books on bike use, service, repair or maintenance.

WASTE ELECTRICAL & ELECTRONIC EQUIPMENT DIRECTIVE

The European Union has adopted directives for collection, recycling and recovery targets for all types of electrical goods across Europe. The Waste Electrical and Electronic Equipment Directive (WEEE Directive) was introduced into UK law in January 2007 by the Waste Electronic and Electrical Equipment Regulations 2006.

These directives cover disposal of WEEE and waste batteries because these items may contain hazardous substances that could, if exposed, pose a danger to your health and/or the environment. WEEE and waste batteries must only be disposed of at designated local waste facility centres and through collection schemes authorized by governmental authorities. Products that the WEEE Directive applies to will be clearly marked with the crossed-out wheelie bin symbol (below). Do not discard these items with general household waste. Instead, it is your responsibility to dispose of your waste electrical equipment appropriately. Contact your local council, waste authority or household waste disposal service for information on local recycling facilities.



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1 INTRODUCTION

FACTOR® VIS VIRES

Congratulations on your purchase of the **FACTOR®** Vis Vires!

As the proud owner of one of the most technologically advanced road bikes in the world, you're more than just a customer – you're part of the family.

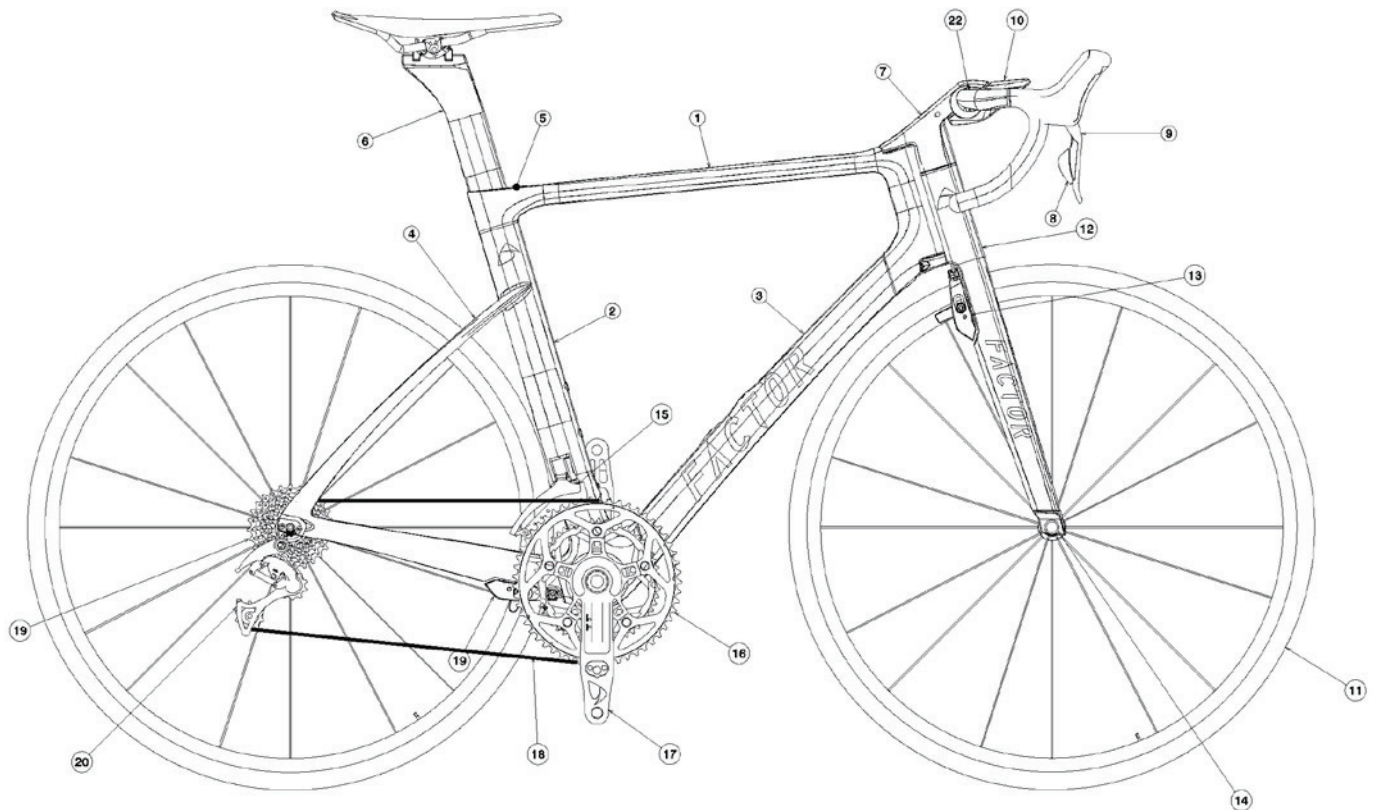
At **FACTOR®**, we live and breathe cycling. The Vis Vires represents the culmination of our unique engineering heritage and cutting-edge composite technologies, and each bike is built to exacting specifications and the highest standards to ensure that you get the best possible performance. But the journey doesn't end there!

As part of the **FACTOR®** family, you can call on us at any time for help and advice. Whether you need fitting suggestions, component advice or just want to chat about cycling, our engineers are here to help. Our commitment to the highest levels of customer service ensures that any issues you may encounter will be resolved quickly, and to your satisfaction. We wouldn't have it any other way.

Above all else, your passion is our passion. All of us here at **FACTOR®** would like to thank you for choosing the Vis Vires, and we can't wait to see how you perfect your ride!

2 PREPARATION FOR RIDING

2.1 THE PARTS OF YOUR BIKE



| | | | | | |
|---|-----------------|----|--------------------|----|------------------|
| 1 | Top Tube | 9 | Brake Lever | 17 | Crank Arm |
| 2 | Seat Tube | 10 | Logger Mount | 18 | Chain |
| 3 | Down Tube | 11 | Wheel | 19 | Rear Brake |
| 4 | Seat Stay | 12 | Forks | 20 | Rear Derailleur |
| 5 | Seat Post Wedge | 13 | Front Brake | 21 | Sprocket Cluster |
| 6 | Seat Post | 14 | Quick-Release Axle | 22 | Handlebars |
| 7 | Stem | 15 | Front Derailleur | | |
| 8 | Shifter | 16 | Crank Set | | |

2.2 INTENDED USE

All FACTOR® bikes are considered to be 'Condition One' bikes, intended for road and smooth track use only.

CONDITION 1

Bikes designed for riding on a regular paved or smooth unpaved surface where the tires do not lose ground contact, or do so unintentionally.

Intended:

To be ridden on paved roads and other flat surfaces only.



Not intended:

For off-road, cyclo-cross, touring, stunts or jumps of any kind.

Maximum Weight Limit

| RIDER lbs. / kg | LUGGAGE* lbs. / kg | TOTAL lbs. / kg |
|-----------------|--------------------|-----------------|
| 250 / 113.4 | 10 / 4.5 | 260 / 117.9 |

* Seat bag/Handlebar bag only.

For a full list of intended use classifications, see Section 8.

2.3 PRE-RIDE SAFETY

Before riding a new bike, you should always perform some simple checks to ensure that all components are functioning properly and to your satisfaction, and to ensure that the bike is well-fitted and optimised to suit your riding style. Before riding, always check the following aspects of bike fit:

- Standover height, saddle position and overall size.
- Appropriate handlebar and stem height.
- Easy and comfortable brake operation.

See Section 3 for further information on bike fit. If you are unsure of, or do not fully understand the operation of your new bike, contact **FACTOR®** before riding.

2.4 CYCLING & ROAD SAFETY

Road and rider safety are just as important on a bike as on any other road vehicle – perhaps more so. If you are not familiar with the laws of the road applicable to the area in which you intend to ride your new bike, ask your local bike retailer for information on local traffic safety courses, or a good book on traffic and road safety. To help you get started, here are some simple safety rules:



Figure 1: Cycle helmet

Always wear a cycling helmet which is certified to EN 1078:2012 or your national equivalent and is appropriate for the type of riding you do. Always follow the manufacturer's instructions for care and maintenance of your helmet.

Ensure you have any other legally required safety equipment correctly installed and operating without interference: lights, reflectors, visible or reflective clothing, etc.

Always comply with all local road and riding laws. It is your responsibility to be aware of, and adhere to, any applicable laws. Pay careful attention when riding in traffic-heavy or other hazardous areas.

Ensure that all bike safety devices, such as wheel and brake quick-releases and secondary retention devices are correctly adjusted and functioning normally.



WARNING: Many countries require specific safety devices. It is your responsibility to familiarize yourself with the laws of the region where you ride and to comply with all applicable laws, including properly equipping yourself and your bike as the law requires.

Observe all local bicycle laws and regulations. Observe regulations about bicycle lighting, reflectors, licensing of bicycles, riding on pathways, laws regulating bike path and trail use, helmet laws, child carrier laws, and special bicycle traffic laws. It is your responsibility to know and obey the laws.

As a road user, you share the road (or cycle path) with other users. Be aware of other road or path users at all times, and respect their right of way.

Use designated cycle lanes and paths, where available. If there is no designated path or lane, ride as appropriate for the laws of the road in your area. Never ride against the direction of traffic flow, and if you intend to ride in an unfamiliar country, always check all applicable laws before riding.

Never ride while using headphones or other, similar audio devices. Headphones obscure traffic noise and reduce your situational awareness.

Never carry a passenger. **FACTOR®** performance cycles are intended for a single, adult rider only.

Indicate the direction of a turn or other manoeuvre by using appropriate, approved hand signals.

Ride 'defensively'. Cyclists can be difficult to see, especially after dark. Do not weave through traffic, under-take, or make any risky or surprising manoeuvre while on the road. Always be prepared to react should a danger present itself, and expect the unexpected.

Never attempts jumps, wheelies, flips or other stunts. **FACTOR®** performance cycles are designed for road and smooth track use only. If you intend to enter competition with your bike, check with **FACTOR®** that your bike is suitable before entering, and read Section 2.8.

Take extra care if riding after dark, in adverse weather conditions or conditions of poor visibility.

2.5 BIKE SAFETY

Before any ride, you should always check that your bike is in complete working order. Check each component for wear and tear, delamination, cracks or any other sign of damage, and never ride a bike with damaged components.

Before all rides, check that the following components are properly adjusted and in good working order:

- Brakes
- Tyres and wheels
- Wheel quick-releases
- Handlebar, bar ends and saddle
- Aerobars (if fitted)
- Clip-less or 'Toe-Clip'/strapped pedals
- Derailleurs
- All nuts, bolts, screws and other fasteners.

For more detailed information on these components beyond that provided in this Owner's Manual, please see the accompanying Technical Supplement.



WARNING: Correct tightening force on fasteners – nuts, bolts, screws – on your bike is critical to rider safety. Incorrect tightening force may result in component failure, which could result in accident, injury or death.

2.6 PRACTICE ENVIRONMENT

When you take your first ride on your new **FACTOR®** bike, ensure that you choose an area that is well lit, safe and free from road hazards. Learn the handling and operation of your bike and any accessories, and familiarise yourself with functions like braking action, appropriate braking pressure, gear shifting and general control-response times.

If you have any questions, or if anything about your new **FACTOR®** bike appears not as it should be, contact **FACTOR®** for assistance.

2.7 ADVERSE WEATHER & NIGHT RIDING

Cycling at night, or in adverse weather conditions presents a higher risk of accident as compared to daylight or good-weather riding. Environmental conditions play a significant factor in road and bike safety, and unlike many motor vehicles, most bikes do not have additional lighting or safety features (such as 'fog lights') designed to alleviate the risks of riding in adverse conditions.

When riding at or after dusk, or at night, you should take extra care to ensure that your bike has all appropriate safety equipment. Bike lights should meet all national regulatory requirements, and all reflectors should be properly positioned and fastened. Reflectors are a legal requirement for road use in many countries, and should never be removed.

Wearing bright, visible and/or reflective clothing can significantly increase your visibility. High-visibility jackets, leg and arm bands all contribute to your visibility, and thus, your safety. Never ride at night or in adverse conditions while wearing dark or non-reflective clothing.

Damp or wet weather can significantly reduce the traction and braking efficiency of your bike. Braking distances will be increased, as will the chances of locking up (or 'skidding') your wheels while slowing the bike.



WARNING: Reflectors are not a substitute for required lights. Riding at dawn, at dusk, at night or at other times of poor visibility without an adequate bike lighting system is dangerous and may result in serious injury or death.



WARNING: Do not remove the installed front or rear reflectors or reflector brackets from your bike. They are an integral part of the bike's safety system. Removing the reflectors may reduce your visibility to others using the roadway. Being struck by other vehicles may result in serious injury or death.

2.8 RACING & COMPETITION

When you engage in competitive riding of any kind, you voluntarily assume an increased risk of accident, injury or death.

Not all bikes are designed for competitive riding. Those that are may not be suitable for all classifications of competitive riding. **FACTOR®** performance cycles are intended for road and smooth track use only. Check with **FACTOR®** about the suitability of your bike before entering any competitive event.



CAUTION: Bikes ridden in competitive events are often subject to greater strain and wear and tear, due to the aggressive nature of most competition. Competitive riding may increase the chances of structural and/or component failure, potentially resulting in accident, injury or death.

3 BIKE FIT

Ensuring your bike fits correctly is a critical aspect of bike safety and comfort. The fit suggestions in this manual comprise the basic minimum standards for common bike fit and comfort. For more detailed fitting suggestions and information, contact **FACTOR®**.

Adjusting bike fit requires experience, knowledge and the correct tools. If you attempt to adjust the fit of your bike yourself, always have the work checked by a qualified bike mechanic before riding.



WARNING: If your bike does not fit properly, you may lose control or fall. If your new bike doesn't fit, contact **FACTOR®** or your local bike retailer before riding.

3.1 ELEMENTS OF FIT: STANDOVER HEIGHT

Standover height is the most basic element of correct bike fit. Standover height is considered to be the distance from the ground to the height at which your crotch straddles the frame of the bike while standing. A bike which you will only ride on paved or smooth-track surfaces should provide a minimum standover height (or 'crotch clearance') of two inches, or five centimetres over the frame.

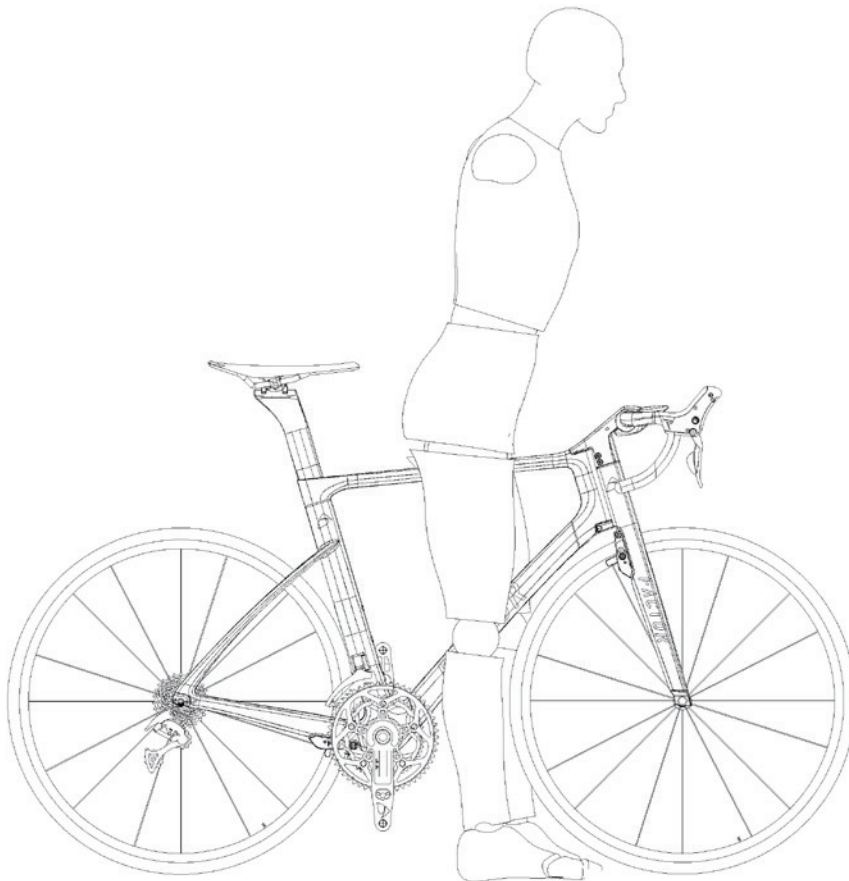


Figure 2: Correct standover height

To check for correct standover height, straddle the bike and bounce carefully on your heels. If your crotch contacts the frame, the bike is too large.

3.2 ELEMENTS OF FIT: SADDLE POSITION

Appropriate saddle positioning is an important factor in bike comfort. If the saddle is not comfortable, it likely requires adjustment.

3.2.1 Vertical Adjustment & Correct Saddle Height

To ensure correct saddle height:

- Sit on the saddle.
- Place one heel on a pedal.
- Rotate the crank until the pedal with your heel on it is in the 'down' position and the pedal is parallel to the ground.



Figure 3: Correct saddle height

Once in this position (see Fig. 3):

- If your knee is bent, then the saddle is too low.
- If you must rock your hips to reach the pedal, your saddle is too high.



WARNING: After any saddle adjustment, be sure that the saddle adjusting mechanism is properly tightened before riding. A loose saddle clamp or seat-post binder can cause damage to the seat-post, or can cause you to lose control and fall.

3.2.2 Maximum & Minimum Insertion Marks

Once you are satisfied that your saddle is in the correct position, ensure that the seat-post does not project beyond the bike's frame past its 'Minimum Insertion Mark'. The Minimum Insertion Mark should never be visible above the frame of the bike once your saddle is adjusted.

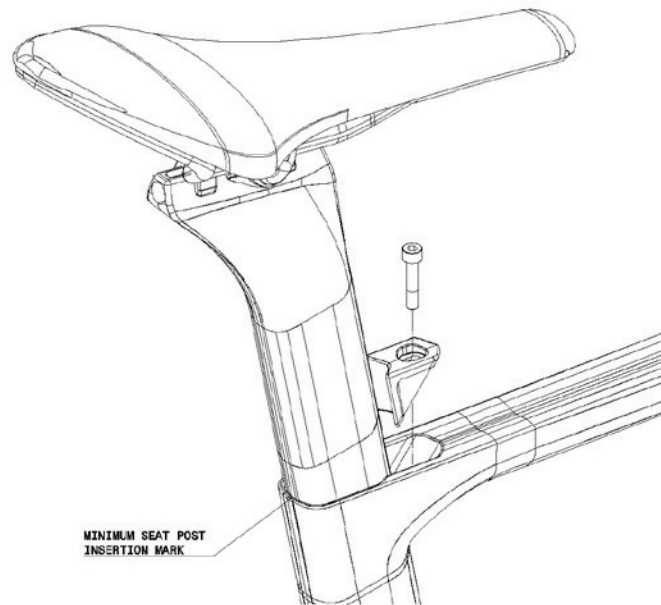




Figure 4: Minimum Insertion Mark

Equally, some seat-posts have a 'Maximum Insertion Mark'. If your seat-post has this mark, ensure that the seat-post is not lowered into the frame beyond this point. This mark should always be visible between the saddle and the frame. If, on adjusting your saddle, you discover that the correct saddle height for your ride results in either mark being inappropriately visible/invisible, contact **FACTOR®** to request a replacement seat-post better adjusted to your size.

 **WARNING:** If your seat-post extends from the frame beyond the Minimum Insertion or Maximum Extension marks, your seat-post may break, possibly resulting in accident, injury or death.

3.2.3 Horizontal/Angular Adjustment

The forward and backward position of the saddle, as well as the saddle angle, can be adjusted to suit rider preference. See the accompanying Technical Supplement for more information on how to adjust your saddle and seat-post.

 **WARNING:** After any saddle adjustment, ensure that the saddle adjusting mechanism is properly tightened before riding. A correctly tightened saddle adjusting mechanism will allow no saddle movement in any direction. Check your saddle before every ride.

If, after adjusting your saddle, you still find it uncomfortable, you may need a different saddle design. Do not ride your bike with an uncomfortable saddle. Contact **FACTOR®** for help in selecting a saddle appropriate for your size and riding style.

3.3 ELEMENTS OF FIT: HANDLEBAR HEIGHT AND ANGLE

The type of stem and bars fitted to your Factor bike may vary depending on the particular model. See the accompanying Technical Supplement specific to your bike for full details on how to adjust the height and angle of your handlebars.

FACTOR® forks are an integral component of the bike. If you encounter any problems or damage to your forks, do not ride the bike. Contact **FACTOR®** for advice and replacement components.



WARNING: On some bikes, changing the stem or stem height can affect the tension of the front brake cable, locking the front brake or creating excess cable slack which can make the front brake inoperable. If the front brake pads move in towards the wheel rim or out away from the wheel rim when the stem or stem height is changed, the brakes must be correctly adjusted before you ride the bike.



WARNING: An insufficiently tightened stem binder bolt, handlebar binder bolt or aerobar extension clamping bolt may compromise steering action, which could result in accident, injury or death.

3.4 ELEMENTS OF FIT: CONTROL SYSTEM ADJUSTMENT

The position and angle of the brake and Dual Control (gear shift) Levers on your bike can be changed. Consult the accompanying Technical Supplement for more information, or contact **FACTOR®** for advice.

3.5 ELEMENTS OF FIT: BRAKE REACH & FUNCTION

Most braking systems can be adjusted to improve reach, control and accessibility for the user. See the accompanying Technical Supplement for more information, or contact **FACTOR®** for advice.



WARNING: Brake lever travel that is insufficient to apply full braking power can result in loss of control, which could result in accident, injury or death.

4 ASSEMBLY & REQUIRED TOOLS

4.1 ASSEMBLY

FACTOR® will perform the following assembly operations before your bike is delivered to you:

- Headset stem installed and adjusted.
- Handlebars clamped onto stem.
- Brake/shift levers installed onto handlebars.
- Front brake installed onto fork.
- Brake and shifter cables threaded and attached.
- Brakes and derailleurs installed and adjusted.

The seat and seat-post, while provided, will not be assembled prior to delivery to avoid damage and scratching of the components. More detailed information on the installation of the seat and seat-post can be found in the accompanying Technical Supplement.

4.2 RECOMMENDED TOOLS

When considering any assembly or adjustment procedures, ensure that you have all required tools before commencing. The following tools are required to assemble and maintain your **FACTOR®** bike:

- 2, 2.5, 3, 4, 5, 8 mm Hex keys
- Torx T-10 tool
- Shimano TL-EW02 Di2 Cable Tool
- Park Tools RT-1 Headset Removal Tool
- Dead-blow, or soft-faced, mallet
- Brake cable cutters for both inner cables and outer casings.
- Torque wrenches capable of 1-30 Nm.
- Park Tools HHP-2 or HHP-3 bearing press tool.
- 2 x Long brake cables to act as cable guides.
- Old spoke, or similar, to act as hook for cables and outer casings.
- 9 mm A/F Spanner

If you are unsure of the correct assembly or maintenance procedure, it is strongly recommended that you contact **FACTOR®** or your local bike retailer for further information and support before attempting to assemble your bike. Should you attempt any assembly or maintenance operation yourself, **FACTOR®** recommends that the work be checked by a qualified bike mechanic before riding. Always follow the manufacturer's instructions when assembling any third-party components or accessories.

4.3 COMPONENT PROVIDERS

Links to common component providers' websites are provided below. Please ensure you locate and follow the directions for your particular component model.

| | |
|---------------------------|---|
| FSA: | http://www.fullspeedahead.com/ |
| Shimano: | http://www.shimano.com/ |
| Ritchey: | http://www.ritcheyllogic.com/ritchey_index.phtml |
| Fi'zi:k: | http://fizik.it/en/ |
| Black Inc. Wheels: | http://www.blackincwheels.com/ |
| TRP Brakes: | http://www.trpbrakes.com/ |

5 IMPORTANT BIKE COMPONENTS

5.1 GEARS

Your **FACTOR®** bike utilises a 'derailleur' drive-train.

Gear-shifting controls on derailleur drive-trains come in several different flavours: levers, triggers, twists, combination controls and more. Ask **FACTOR®** or your local bike retailer to explain the type of shifting controls that are on your bike. For more information on your shifting system, see the accompanying Technical Supplement and documentation provided by the manufacturer, where appropriate.

Gears function by shifting the front and rear derailleurs toward or away from the centreline of the bike, which changes the position of the drive chain. Shifting the chain in towards the centreline is called a 'downshift', and shifting the chain away from the centreline is known as an 'upshift'.

Upshifts occur when the drive chain is shifted down towards a smaller gear at the front derailleur, or upwards towards a larger gear at the rear derailleur. Downshifts occur when the drive chain is shifted up to a larger gear at the front derailleur, or down towards a smaller gear at the rear derailleur.

Derailleurs will only function if the drive chain is under tension and moving forwards.

Always ride in a gear appropriate to the gradient and surface you are riding on, and understand the operation and maintenance of your gears fully before riding.



WARNING: Never shift gears while pedalling backwards. Never pedal backwards immediately after shifting a gear. You may jam the chain and cause serious damage to the bike, potentially resulting in accident, injury or death.

5.1.1 Front Derailleur

The front derailleur is controlled by the left Dual Control Lever, and operates by moving the chain between larger and smaller chain rings to shift between higher and lower gears.

5.1.2 Rear Derailleur

The rear derailleur is controlled by the right Dual Control Lever, and operates by moving the chain between larger and smaller gear sprockets to shift between higher and lower gears.

5.1.3 Application of Gears

It is important to select an appropriate gear for the gradient and surface you are riding on. Higher gears provide greater speed and distance per revolution of the cranks, and lower gears provide less speed and shorter distances per revolution. Always practice changing gears in a safe, well lit and hazard-free environment until you are fully comfortable with their use. Contact **FACTOR®** if you are unsure of any aspect of gear operation or maintenance.

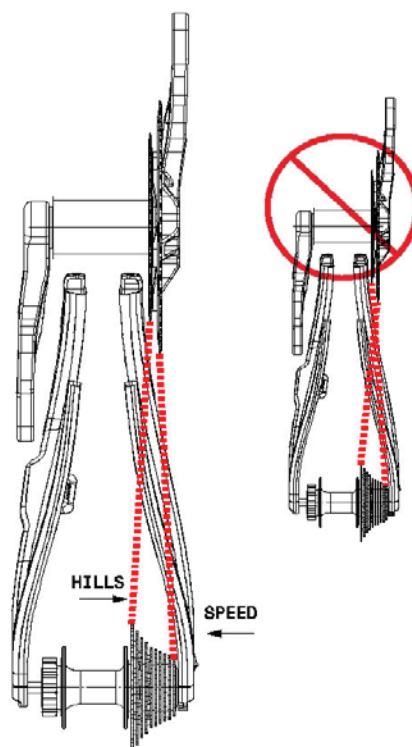


Figure 5: Application of gears/cross-chain gears

Cross-chain gears is a term used to describe a shift to the largest or smallest chain rings at both the front and rear of the shifting system. Chains in this position are not correctly aligned with the bike's centreline, and as a result, much greater strain is placed on all components within the drive train. This may result in component failure.

Cross-chain gears should be avoided at all times. If you accidentally shift into a cross-chain gear, correct the chain angle before continuing.



WARNING: Cross-chain gears place increased stress on all drive train components. Too much stress in any component may cause it to fail, possibly resulting in accident, injury or death.

5.2 BRAKES

Understanding the brakes on your bike is a critical aspect of bike and rider safety. For detailed information on the installation and maintenance of your braking system, please see the accompanying Technical Supplement and documentation provided by the manufacturer.

For replacement brake pads, contact TRP direct (see Section 4.3), or consult **FACTOR®** for advice and assistance.

5.2.1 Brake Control Setup

Brakes on **FACTOR®** bikes will be set up to suit the country the bike is intended to be used in. Within the UK, the left-hand brake lever controls the rear brake, and the right-hand brake lever controls the front brake.

Many braking systems include a quick-release mechanism to allow easier installation and removal of the wheels during maintenance. If this quick-release mechanism is in the 'OPEN' position, the brakes will not function.

Rim-brakes create their friction braking action by operating on the rims of the wheels, unlike disc brakes, which create their friction braking action on a separate (disc) surface. If rim brakes are fitted, damage or wear and tear on the wheel rims may result in reduced braking efficiency. It is critical that you take care to properly maintain your wheel rims to ensure proper functioning of your braking system.

Never ride a bike if rim-damage is present on either wheel. Replace any damaged wheels before riding.

5.3 WHEELS

Most wheel quick-release systems utilise a cam action to grip the wheel in place once tightened. Wheel quick-release systems should be checked before every ride.

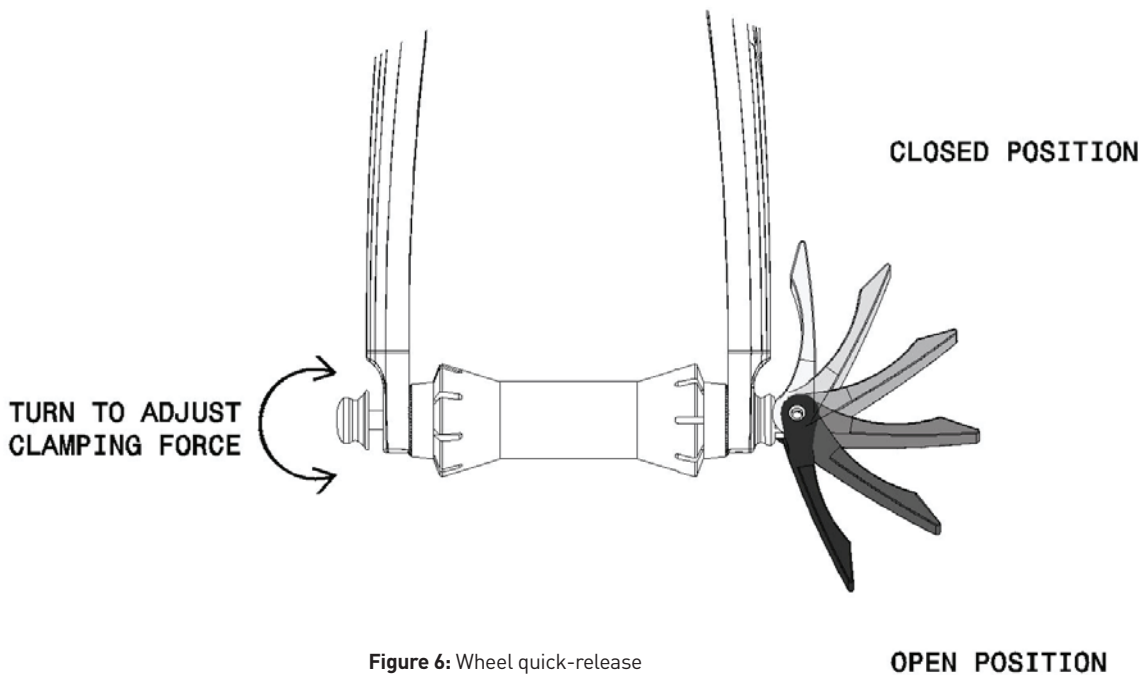


Figure 6: Wheel quick-release

5.3.1 Adjusting Quick-Release Mechanisms

Clamping force on quick-release mechanisms is controlled by the tension adjusting nut. Turning the nut clockwise increases clamping force, and turning it anti-clockwise reduces clamping force. The cam lever should always be prevented from turning when adjusting quick-release mechanisms.



WARNING: Riding with an improperly adjusted wheel quick release can allow the wheel to wobble or come off the bike, which can cause serious injury or death.

5.3.2 Secondary Retention Devices

The front forks of many modern bikes possess a secondary retention device designed to reduce the chance of the wheel disconnecting from the bike (as a result of an improperly adjusted quick-release mechanism) during use. Secondary retention devices are never a substitute or alternative for proper adjustment of quick-release systems.



WARNING: Do not remove or disable the secondary retention device. As its name implies, it serves as a back-up for a critical adjustment. If the quick release is not adjusted correctly, the secondary retention device can reduce the risk of the wheel disengaging from the fork.

Secondary retention devices are not a substitute for correct quick release adjustment. Failure to properly adjust the quick release mechanism can cause the wheel to wobble or disengage, which could cause you to lose control and fall, resulting in accident, injury or death.

5.3.3 Installing a Quick-Release Front Wheel

- Move the quick-release lever to the 'OPEN' position (Fig. 8).
- With the fork facing forward, insert the wheel between the fork blades so that the axle seats firmly in the fork dropouts. The quick-release lever should be on the left-hand side of the bike.
- Tighten the tension adjusting nut with your left hand while holding the quick-release lever in the 'OPEN' position with your right, until the nut is hand-tight.
- Keeping the wheel centred, push the wheel firmly up and into the fork dropouts and move the quick-release lever to the 'CLOSED' position (Fig. 7). Ensure that the quick-release lever is parallel to the fork blade. If this proves difficult, return the lever to the 'OPEN' position and re-adjust the tension adjusting nut by half a turn (clockwise) before trying again.
- Re-engage the brake quick-release mechanism to restore appropriate brake clearance and spin the wheel to ensure that it is properly centred. Test the brakes to ensure correct functionality.

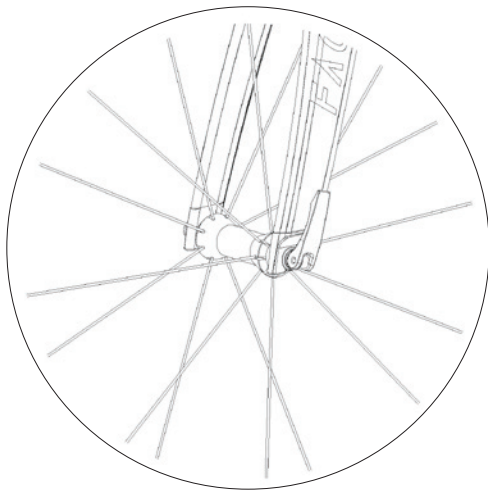


Figure 7: Wheel quick-release: 'CLOSED' position

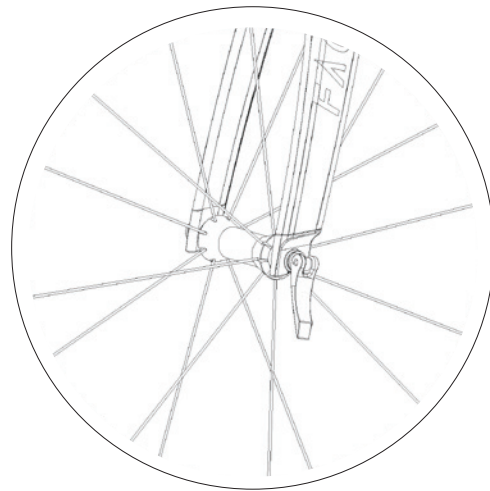


Figure 8: Wheel quick-release: 'OPEN' position

5.3.4 Removing a Quick-Release Front Wheel

- Disengage any wheel-rim braking systems via the brake's quick-release.
- Move the wheel quick-release lever to the 'OPEN' position (Fig. 8).
- Loosen the tension adjusting nut sufficiently to allow removal of the wheel and release any secondary retention devices.
- Raise the wheel a few inches from the ground and tap lightly on the top of the wheel with your hand, until the wheel is released from the front forks. Take care never to put too much pressure on the wheel, fork or stem while removing the wheel.

5.3.5 Installing a Quick-Release Rear Wheel

- Ensure the rear derailleur is in its outermost (highest gear) position.
- Pull the derailleur body back with one hand.
- Move the wheel quick-release lever to the 'OPEN' position (Fig. 8). The lever should be on the side of the wheel opposite the derailleur and sprockets.
- Place the drive chain on top of the smallest rear sprockets, then insert the wheel firmly up and into the fork dropouts.
- Tighten the tension adjusting nut with your right hand while holding the quick-release lever in the 'OPEN' position with your left, until the nut is hand tight.
- Keeping the wheel centred, push the wheel firmly into the fork dropouts and move the quick-release lever to the 'CLOSED' position (Fig. 7). Ensure that the quick-release lever is parallel to the fork blade. If this proves difficult, return the lever to the 'OPEN' position and re-adjust the tension adjusting nut by half a turn (clockwise) before trying again.
- Re-engage the brake quick-release mechanism (if required) and spin the wheel to ensure that it is properly centred. Test the brakes to ensure correct functionality.



WARNING: The rear wheel must be secured to the bike frame with sufficient force to prevent it being pulled forward by the drive chain, regardless of the rider's pedalling force. If the rear wheel moves while pedalling, the tyre may come into contact with the frame, potentially resulting in accident, injury or death.

5.3.6 Removing a Quick-Release Rear Wheel

- Ensure the rear derailleur is in its outermost (highest gear) position.
- Disengage any wheel-rim braking systems via the brake's quick-release.
- Pull the derailleur body back with one hand.
- Move the wheel quick-release lever to the 'OPEN' position (Fig. 8).
- With the derailleur still pulled back, lift the rear wheel off the ground and push lightly forward and down to remove the wheel. Take care never to put too much pressure on the wheel or fork while removing the wheel.
- Push the rear derailleur back into position.

5.4 HANDLEBARS

The handlebars on your **FACTOR®** bike contain integrated brake and gear cables. Because of this, it is critical that you do not rotate the bars beyond the positions shown in Figure 9. For more information on your handlebars, including maintenance instructions, see the accompanying Technical Supplement and additional information provided by the manufacturer.

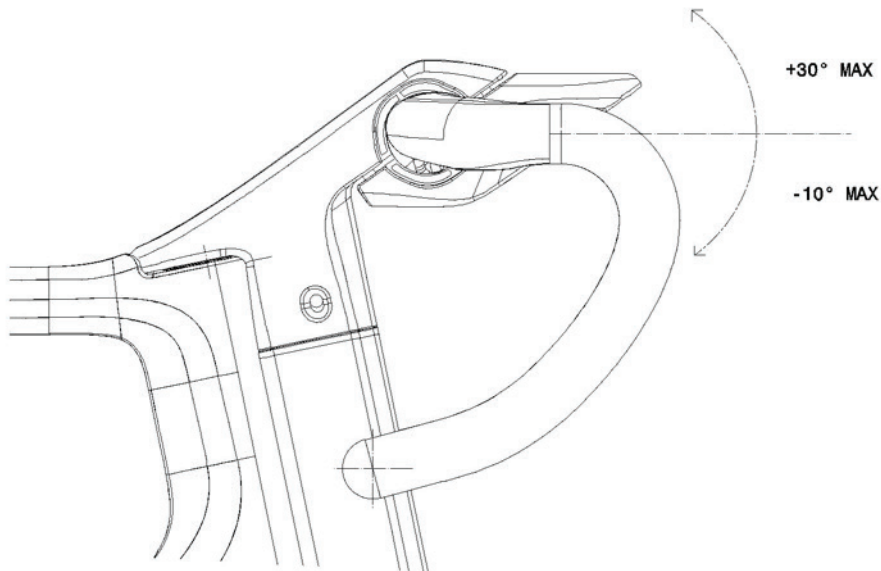


Figure 9: Handlebar over-rotation limits



CAUTION: Due to the nature of the internal cable routing, it is very important that you do not rotate the bars beyond the positions shown in Figure 9. Over-rotation may result in irreparable damage to the Di2 or brake cables.

Some riders fit 'aerobars' to reduce drag and increase performance. If you do this, you must remember that using aerobars requires skills which can only be learned through repeated use.

Use of aerobars reduces your ability to easily reach the brake levers, making slowing or stopping more difficult, and also increases the difficulty of steering, as you steer from your elbows instead of your hands. Use of aerobars also means that the rider's centre of gravity is further forward than during normal riding. Because of this, proper brake control is even more important when using aerobars, as there is a higher risk of pitching over the handlebars during braking.

All bikes with aerobars will respond more strongly and sharply to control inputs, as well as to uneven road or track surfaces (such as potholes etc). You should always practice using your aerobars in a safe, well lit and hazard free environment to ensure you are comfortable with their use. Even if you are fully comfortable with your aerobars, they should never be used in traffic, or when cycling in groups.



WARNING: Failure to confirm compatibility, properly install, operate and maintain any aerobar or related component or accessory can result in serious injury or death.

5.5 PEDALS

FACTOR® bikes are shipped without pedals, allowing the customer to select pedals to suit their own particular riding style. Ensure that you retain and read all manufacturers documentation related to your pedals, and always be sure to install your pedals with the correct torque values, as specified by the manufacturer.

Some pedals come equipped with straps, or toe-clips designed to keep the rider's feet securely positioned during the ride. Use of straps and/or toe-clips requires skills that can only be learned through practice.

Clipping and unclipping your shoes from these pedals requires practice. Always practice using your toe-clips or straps in a safe, well lit and hazard-free environment until you are used to them. Never fully tighten straps or toe-clips while riding in traffic.

Many of these kinds of pedals have additional gripping surfaces to enhance the contact between the rider's shoe and the pedal. These additional surfaces are often sharp, and could result in injury if appropriate pedal control is not exercised. Specific shoes may also be required for pedals of this type; see your local bike retailer or contact **FACTOR®** for more information.

Toe Overlap

Toe overlap is the term used to describe potential contact between your foot and the front wheel during sharp turning angles. When a pedal is in the forward-most position, turning the handlebars to their full inclination may result in your toe being able to touch the front wheel. If this occurs, you have toe-overlap.

To avoid contact between your toe and the wheel while riding, always ensure that when turning, your innermost pedal is kept in the up position. Toe overlap is also a sign that the bike may be too small for you: check Section 3 to ensure that your bike is appropriately fitted.

5.6 TYRES

Bike tyres come in various different styles, designs and classifications. The wheel size and maximum tyre pressure should be marked on the sidewall of the tyre, along with any special use conditions (Fig. 10). Your Factor bike is fitted with 'Clincher' type tyres.

Correct tyre pressure is a critical aspect of bike safety and performance. You should never inflate your tyres with hydraulic air pumps (commonly found in petrol/gas stations), as these pumps expel a large amount of pressurized air very quickly. Too much pressure can damage the tyre. Always use hand pumps, ideally one with a built-in pressure gauge, to inflate your tyres.

Some tyres are designed only to rotate in one specific direction (uni-directional). If this is the case for your tyres, ensure that the tyres are correctly installed before riding.

Tubular tyres, while less common than many other variants, require extra care during installation. Ensure you read and understand all documentation provided by the tyre manufacturer, with particular attention to the gluing technique.

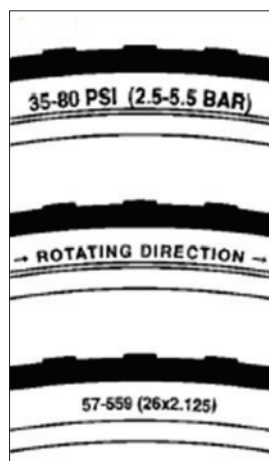



Figure 10: Common tyre information location

6 MAINTENANCE & SERVICE


6.1 TORQUE TABLE

The components of your **FACTOR®** bike require specific torque values in order to function safely and correctly. All fasteners should be tightened to the values specified in the torque table before riding the bike for the first time, and should be checked before every ride. Failure to tighten fasteners correctly could result in the component failing or falling off the bike during use, potentially causing accident, injury or death.

All threads should be greased with a high-quality, non-lithium type grease. Always use a torque wrench set to the correct scale to tighten all fasteners.

 **WARNING:** In case of any disagreement or conflict between the following list and the torque value of any third-party component specified in the manufacturer's literature, please contact **FACTOR®** for review and clarification of the required torque prior to installation.

| COMPRESSION ROD | AS REQUIRED: MAX 6Nm |
|---------------------------------------|----------------------|
| Compression Rod Lower Clamp Bolt | 6 Nm |
| Fork to Stem Bolts x 2 | 6 Nm |
| Handlebar lower clamp M6 Bolts x 2 | 6 Nm |
| Handlebar lower clamp M5 Bolts x 2 | 6 Nm |
| Rear Derailleur Fixing Bolt | 8-10 Nm |
| Front Derailleur Fixing Bolt | 5-7 Nm |
| Front Brake Post Bolts x 2 | 6 Nm |
| Rear Brake Post Bolts x 2 | 6 Nm |
| Factor Power Crank Centre Bolt | 30 Nm |
| Shimano Ultegra crank pinch bolts x 2 | 10-12 Nm |
| Seat Clamp Wedge Bolt | 6 Nm |
| Dual Control Lever clamp | 6-8 Nm |
| Rear Mech Hanger bolts x 2 | Max 1 Nm |
| Saddle clamp to seat-post bolts x 2 | 5 Nm |
| Saddle rail clamp | 12 Nm |
| Di2 Battery mount bolts x 2 | Max 2 Nm |

 **WARNING:** Under-tightening or over-tightening fasteners can result in damage to the bike, as well as possible component failure. Both may result in accident, injury or death. If you are unsure, have a qualified bike mechanic check before you ride.

6.2 RECOMMENDED LUBRICANTS

FACTOR® recommends that you use a good quality 'dry' lubricant. Consult with **FACTOR®** or your local bike retailer for suggestions.

The chain and other lubricant-sensitive components should be lubricated at least once every month, or more frequently as required.

6.3 WEAR AND TEAR COMPONENTS

The following **FACTOR®** components are considered to be subject to normal wear and tear, and as such are not covered under the terms of the Warranty. Please refer to your Warranty documentation for further details.

- Handlebar tape
- Cassette
- Chain
- Chain-rings
- Tyres and inner-tubes
- Brake pads
- Saddle
- Bottom bracket
- Headset bearings
- Bearings
- Cables (inner/outer)
- Di2 Battery

6.4 REPLACEMENT COMPONENTS

If any component of your **FACTOR®** bike requires replacement, only genuine replacement parts should be used. Contact **FACTOR®** in the first instance to request genuine replacement components, and for advice and assistance in replacing any third-party components.

6.5 GENERAL MAINTENANCE SUGGESTIONS

Regular and thorough maintenance is an important part of a bike's life-cycle. Because of the wear and strain placed on components throughout the bike, no bike or component will last 'forever'. Individual components have their own life-cycles and may fail at any time, potentially causing accident, injury or death.

To reduce the risk of component failure, you should check, maintain and service your bike properly. Where possible, have a qualified bike mechanic perform maintenance for you, or if you prefer to maintain your bike yourself, have a mechanic check your work before riding.

Remember that some bike components, particularly braking and gear cables, may self-adjust during the first few rides of a new bike. This is known as 'seating' and is normal. However, because of this, it is recommended that you take your first rides in a safe, well lit and hazard-free environment. Check regularly during those first rides for any sign of seating, and adjust components as necessary to maintain correct operation.

Clean your bike regularly to ensure trouble free operation and smooth running of sensitive components like chains, sprockets etc. Avoid using pressure washers or household hoses on any sensitive electrical equipment (e.g. crank-sets) that may be present on your bike. If you ride in wet weather, or through dirty environments, clean the bike as soon as you finish your ride to prevent short and long-term salt and/or water damage to any components.

Ensure your chain and any other lubricant-sensitive components are appropriately lubricated before riding. Re-apply lubricant at regular intervals as part of your regular maintenance cycle.

Check all brakes, gears and other control operations, control cables and housings. Ensure that wheels are correctly fastened and inspect the wheel-rims for damage. If you notice any damage to the wheel-rims, do not ride the bike.

Check all brake pads to ensure good wheel contact, and ensure that all cables are the correct length and tightly fastened.

Before each ride, check the frame and all components for signs of damage. Any discolouration, delamination, cracks or tears indicate that the frame or component has reached the end of its lifespan, and should be replaced. Never ride a bike with damaged frames or components.

FACTOR® recommends that your bike be checked by your local bike retailer or qualified bike mechanic at least once every 50-100 hours of riding.



WARNING: As with all mechanical components, the bicycle is subjected to wear and high stresses. Different materials and components may react to wear or stress fatigue in different ways. If the design life of a component has been exceeded, it may suddenly fail, possibly causing injuries to the rider. Any form of crack, scratches or change of colouring in highly stressed areas indicate that the life of the component has been reached, and it should be replaced.

7 UNDERSTANDING CARBON FIBRE

It is important to understand the differences between metal and carbon fibre (sometimes called 'composite'). Carbon fibre is an increasingly common material in many high-performance bikes, chosen for its low material weight and high strength-to-weight ratio.

However, carbon fibre components possess different characteristics to metal components, especially when it comes to degrees of ductile (a material's ability to deform under tensile stress) strength. Metal frames and components will bend or deform if subjected to excessive stress or fatigue, and are usually less corrosion resistant than carbon fibre components. Metal components may still break, but the ductility of the particular metal used usually ensures some deformation or bending prior to breakage.

Unlike metal, carbon fibre does not deform or bend under tensile stress, regardless of the stress applied. Once a carbon fibre component is over-stressed, it will break, not bend. While many carbon fibre frames and components have long fatigue lives, it is still important to check your frame and components before riding for any signs of wear or damage.

One of the key signs of carbon fibre wear is called 'de-lamination'. De-lamination occurs when the material (usually epoxy or fabric) holding the carbon fibres loses its bonding ability. Common signs of delamination include:

- White or cloudy areas.
- Unusual shapes, bulges or other surface deformations, as well as inconsistent surface quality.
- Any difference in sound or feel when tapped or touched.

If you believe your carbon fibre frame or component is damaged or de-laminated, do not ride the bike. Contact **FACTOR®** for advice and assistance.



WARNING: Never ride a bike with a damaged frame or components. If you notice any signs of damage on metal or composite components, stop riding immediately. Have the bike checked by a qualified bike mechanic or your local retailer, or contact **FACTOR®** for advice and assistance.

8 INTENDED USE

The following classifications are used by national standards agencies to determine a bike's 'intended use.' All **FACTOR®** bikes are considered to be 'Condition One', suitable for road and other smooth track surfaces. They are not intended for any other use.

8.1 CONDITION ONE

Bikes designed for riding on a regular paved or smooth unpaved surface where the tyres do not lose ground contact, or do so unintentionally.

8.2 CONDITION TWO

Bikes designed for riding Condition 1, plus unpaved or gravel roads and trails with moderate grades where the tyres do not lose ground contact. Contact with irregular terrain and loss of tyre contact with the ground may occur. Jumps should be limited to 30 cm (12 in).

8.3 CONDITION THREE

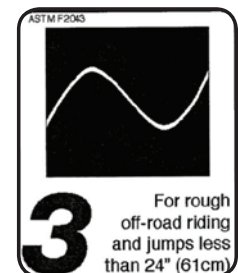
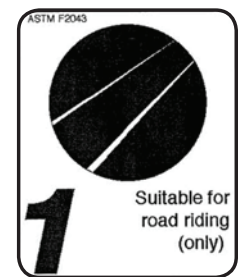
Bikes designed for riding Conditions 1 and 2, plus rough trails, rough unpaved roads, rough technical areas, including areas where momentary loss of tyre contact with the ground may occur, and unimproved trails. Jumps of 60 cm or less are anticipated.

8.4 CONDITION FOUR

Bikes designed for riding Conditions 1, 2, and 3, plus downhill grades on rough trails at speeds in excess of 40 km/h (25 mph), or extreme jumping, or both. Safe use of a bicycle under these conditions is strongly dependent on the skill of the rider.

8.5 CONDITION ZERO (CHILDREN)

Bikes designed to be ridden by children. Parental supervision is required at all times. Avoid areas involving automobiles, and obstacles or hazards including inclines, curbs, stairs, sewer grates or areas near drop-offs or pools.



10 FACTOR® LIMITED WARRANTY

bf1 Systems Limited, a UK corporation located at Technical Centre, Owen Road, Diss, Norfolk, IP22 4ER, England, trading as Factor Bikes ("FACTOR®"), provides the following limited warranty concerning FACTOR® bicycles.

LIMITED LIFETIME WARRANTY ON BICYCLES AND FRAMESETS

Subject to the following limitations, terms and conditions, **FACTOR®** warrants to the original owner for the lifetime of the original owner of each new **FACTOR®** bicycle or frameset that the bicycle frame or frameset is free of defective materials and workmanship. The lifetime limited warranty is conditioned upon the bicycle being operated under normal conditions and use, and properly maintained in accordance with the owner's handbook (as supplied with the **FACTOR®** bicycle).

This lifetime limited warranty does not apply to paint/finish, any **FACTOR®** components considered subject to normal wear and tear or any third-party components attached to the bicycle or frameset, such as wheels, drive train, brakes, or any suspension related parts or components.

Any **FACTOR®** components considered subject to normal wear and tear are covered under a limited one (1) year warranty. The duration of this limited warranty shall be one (1) year, commencing from the date the customer takes possession of the bicycle. **FACTOR®** components considered subject to normal wear and tear will be listed in the Technical Supplement and/or User Manual provided with the bicycle.

Any and all third party components included with or installed on **FACTOR®** bicycles are subject to any manufacturers' guarantee applicable to those components, as specified by the manufacturer.

Additional Conditions

This lifetime limited warranty is made solely to the original owner of this new **FACTOR®** bicycle or frameset, and shall remain in force only as long as the original owner retains ownership of the **FACTOR®** bicycle. This lifetime limited warranty is not transferable. If the bicycle is purchased as a gift, the original recipient of the gift is considered to be the original owner for the purposes of this lifetime limited warranty.

In order to exercise your rights under this lifetime limited warranty, the bicycle or frameset must be presented to **FACTOR®** or an authorized **FACTOR®** dealer, together with a receipt, bill of sale, or other appropriate written proof of purchase which identifies the bicycle or frameset by serial number.

Exclusions & Limitations

The above warranty, or any implied warranty, does not cover:

- Modifications from the original condition except such modifications which are necessary to comply with specific national legislative requirements that may apply in the country of use.
- Normal wear and tear.
- Use of the bicycle for abnormal and/or commercial activities, or for purposes other than those for which the bicycle was designed.
- Damage caused by failure to follow the instruction manual.
- Paint finish and decal damage resulting from normal wear and tear, taking part in competition, jumping, downhill and/or training for any such events or as a result of exposing the bicycle to, or riding the bicycle in, severe conditions or climates.
- Labour and/or transport charges for full or part replacement, repair, return or changeover.
- Accident, neglect, improper handling, abuse or wilful damage, misuse, improper assembly and use of devices or components not originally intended for, or not compatible with the bicycle.
- Any alteration or repair by you or a third party who is not one of our authorised repairers.
- Any specification provided by you.

Remedy

Unless otherwise provided, the sole remedy under the above **FACTOR®** warranty, or any implied warranty, is limited to repair or replacement of defective parts with those of equal or greater value at the sole discretion of **FACTOR®**. Except for this remedy **FACTOR®** will not be responsible for any direct, incidental or consequential loss or damages, including, without limitation, loss or damages for personal injury, property damage or economic losses, whether based on contract, warranty, negligence, product liability or any other theory. Nothing in this limited warranty will exclude or limit Factor's liability for death or personal injury caused by Factor's negligence or any other liability which cannot be excluded or limited by law.

Unless you are a consumer, **FACTOR®** makes no other warranties, express or implied and all implied warranties, including warranties of merchantability, reasonable care, and fitness for a particular purpose are hereby disclaimed.

Miscellaneous

In the event that **FACTOR®** prevails in any court action, you agree to reimburse **FACTOR®** for the expenses, including attorney's fees and expenses of litigation incurred by Factor in defending against your claim.

Claims made outside the country of purchase may be subject to additional fees and restrictions.

Warranty detail and duration may differ by country. This warranty gives you specific legal rights, and you may also have other rights which may vary from place to place. This warranty does not affect your statutory rights.

To the extent that this warranty statement is inconsistent with local law, this warranty shall be deemed modified to be consistent with such law; under such law, certain disclaimers and limitations may apply to the customer.

Some states and countries do not allow the exclusion or limitation of incidental or consequential damages or warranties, so the above limitations or exclusions may not apply to you. If it is determined by a court of competent jurisdiction that a certain provision of this limited warranty does not apply, such determination shall not affect any other provision of this limited warranty, and all other provisions shall remain in effect.

The English language version of this limited warranty will prevail.

This limited warranty is governed by the laws of England and Wales and the courts of England and Wales shall have the non-exclusive jurisdiction to settle any dispute or claim arising out of or in connection to this limited warranty or its subject matter or formation (including non-contractual disputes or claims).